

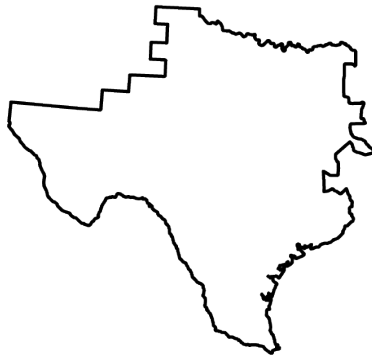


FACT SHEET

2023 NATIONAL TRANSMISSION NEEDS STUDY TEXAS

The U.S. Department of Energy's Grid Deployment Office (GDO) released the National Transmission Needs Study ("Needs Study") in October 2023. The Needs Study is the Department's **triennial state of the grid** report. It identifies transmission needs and provides information about current and anticipated future capacity constraints and congestion on the Nation's electric transmission grid. In this fact sheet, we highlight the transmission needs of Texas. The Needs Study provides further detail on the benefits of transmission that could be realized throughout the country.

TEXAS



Current or Anticipated Need	Improve reliability & resilience	
	Alleviate congestion & unscheduled flows	
	Alleviate transfer capacity limits between neighbors	
	Deliver cost-effective generation to meet demand	
Anticipated Need	Meet future generation & demand with within-region transmission	
	Meet future generation & demand with interregional transfer capacity	

FINDINGS OF TRANSMISSION NEED IN TEXAS

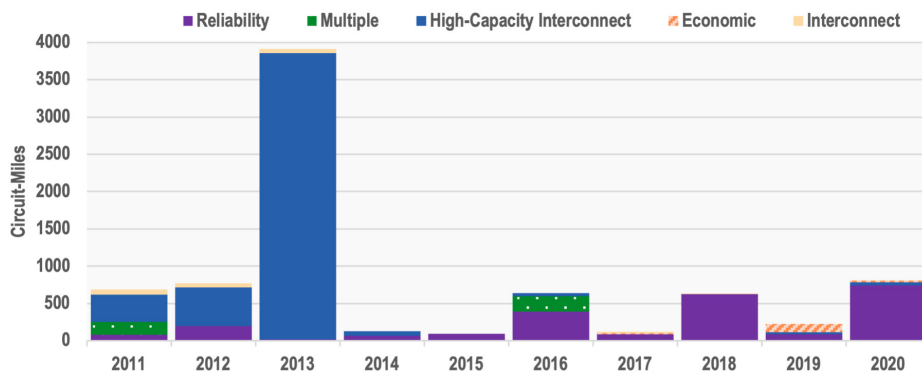
- › **Improve reliability and resilience.** Limited transfer capacity with neighboring regions significantly affects the ability for Texas to address capacity shortages when the system is stressed under emergency conditions, such as those experienced during the February 2021 cold weather event. Increased bi-directional transfer capacities with neighboring regions would improve system reliability during extreme weather events.
- › **Alleviate congestion and unscheduled flows.** High congestion values exist within Texas, indicating that additional transmission deployment would reduce system congestion and constraints. Texas is also anticipated to experience significant congestion due to increases in generation in the western part of the state and limited within-region transmission export capacity into demand centers such as the Dallas-Fort Worth and Houston areas.
- › **Alleviate transfer capacity limits between Texas and the Plains region.** The highest congestion values of interregional transmission from 2012 through 2020 across the entire United States exists between Texas and the Plains region, ranging from \$15/MWh to \$69/MWh. Similarly high congestion values of transmission exist between Texas and the Southwest (\$25/MWh) and Delta (\$16/MWh) regions.
- › **Deliver cost-effective generation to meet demand.** A high proportion of planned, cost-effective renewable resource additions within Texas are located in western Texas, which is a significant distance from load centers located in the eastern part of the state. Capacity expansion modeling suggests that transmission upgrades within Texas will be necessary to deliver cost-effective generation to load under a variety of different transmission technology scenarios.
- › **Meet future generation and demand with additional within-region transmission.** Texas will need an anticipated 6.8 to 9.4 TW-miles of within-region transmission in 2035 (median 9.0 TW-miles, a 140% increase relative to the 2020 system) to meet moderate load growth and high clean energy growth future scenarios.
- › **Meet future generation and demand with additional interregional transfer capacity.** Texas will need an estimated 4.3 to 12.6 GW of additional transfer capacity in 2035 with the Plains region (median of 9.8 GW, a 1,201% increase relative to 2020 levels) to meet moderate load growth and high clean energy growth future scenarios.

HELPFUL LINKS

- › Read the full study at: www.energy.gov/gdo/national-transmission-needs-study
- › Contact GDO with additional questions: transmission@hq.doe.gov

FINDINGS AT A GLANCE

Circuit-miles of new or rebuilt transmission lines (≥ 100 kV) energized between 2011 and 2020 by project driver.

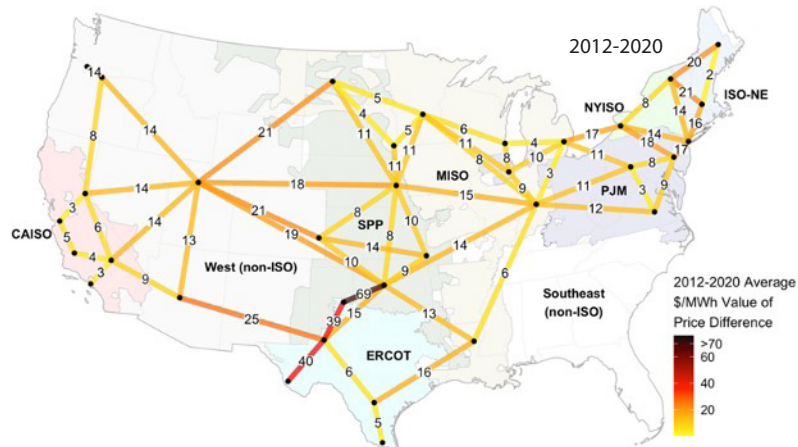


Texas predominantly installed **high-capacity (> 230 kV) transmission to interconnect generation** between 2011 and 2014. Projects energized from 2015 through 2020 were mainly installed to **address reliability concerns**.

Congestion value of hypothetical transmission links between select zonal nodes within and across regions.

Wholesale market price differentials demonstrate that a **high value of new interregional transmission exists between Texas and the Plains region**.

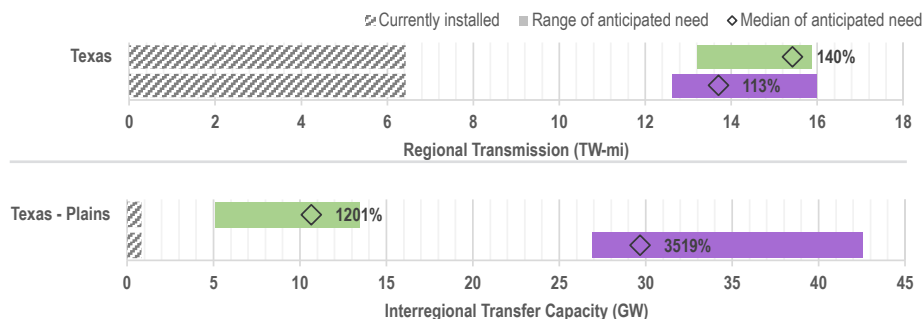
The average marginal value of transmission between Texas and the Plains region from 2012 through 2020 is equal to \$42/MWh.



Note: Wholesale market price data is limited for non-Regional Transmission Organization (RTO)/Independent System Operator (ISO) regions. Absence of data does not necessarily indicate that there is no need for transmission to alleviate congestion and/or unscheduled flows in non-RTO/ISO regions. Findings organized using geographic region nomenclature as described in the Needs Study. Source: D. Millstein, et al. (2022)

Within-region transmission and interregional transfer capacity need for Texas in 2035

Range of new transmission need for future scenarios with **moderate load and high clean energy growth** (green, top for each region) and **high load and high clean energy growth** (purple, bottom). Median % growth compared to 2020 system shown.



Capacity expansion modeling results for the Moderate/High scenario group suggest an anticipated need of **9.0 TW-miles of new within-region transmission by 2035** (140% growth relative to 2020) and **9.8 GW of new interregional transfer capacity with the Plains region by 2035** (1,201% growth relative to 2020).

Median 2035 capacity expansion modeling results for Moderate/High scenario group.